

# UK Patent Application GB 2 137 733 A

(43) Application published 10 Oct 1984

(21) Application No 8309668

(22) Date of filing 8 Apr 1983

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(51) INT CL<sup>3</sup>  
F16K 1/34

(52) Domestic classification  
F2V P11  
U1S 1240 F2V

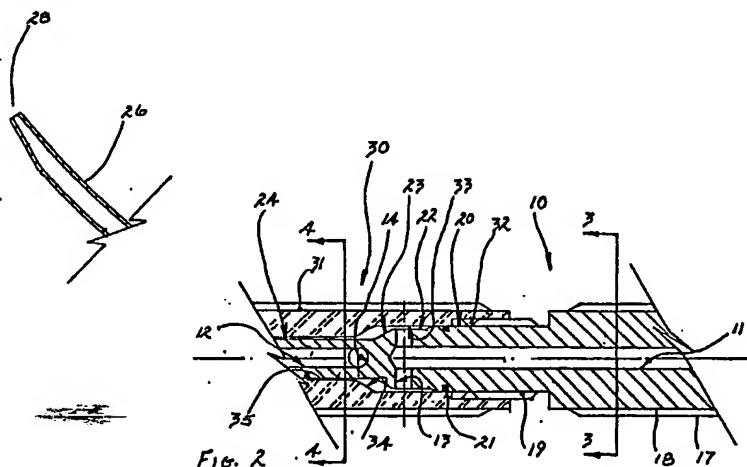
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(58) Field of search  
F2V

## (54) Fluid jet control nozzle

(57) A fluid jet control nozzle comprises a plastics sleeve 30 screw-threaded co-axially upon a cylindrical metal body 10. Inlet and outlet bores 11, 12 in the body communicate with a sealed annular chamber formed between the sleeve and the body, and a valve constituted by co-acting frusto-conical surfaces 34, 23 respectively provided in the sleeve and on the body prevents or permits the flow of water from the inlet to the outlet depending upon the axial position to which the sleeve is moved upon the body by virtue of the screw thread.



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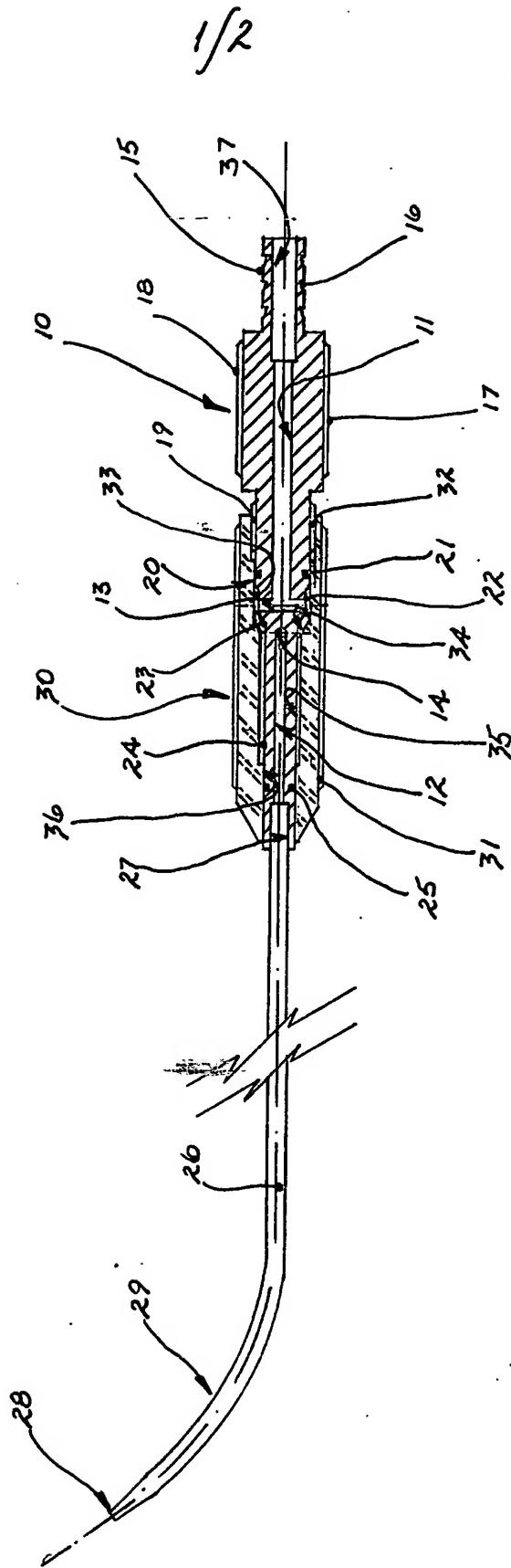


Fig. 1

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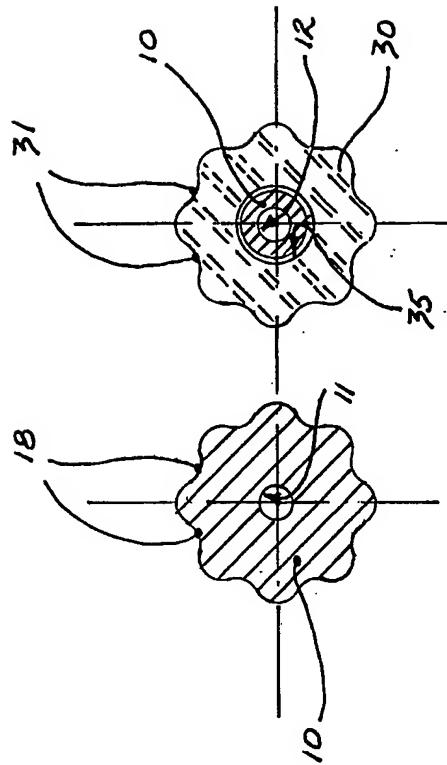


Fig. 4

Fig. 3

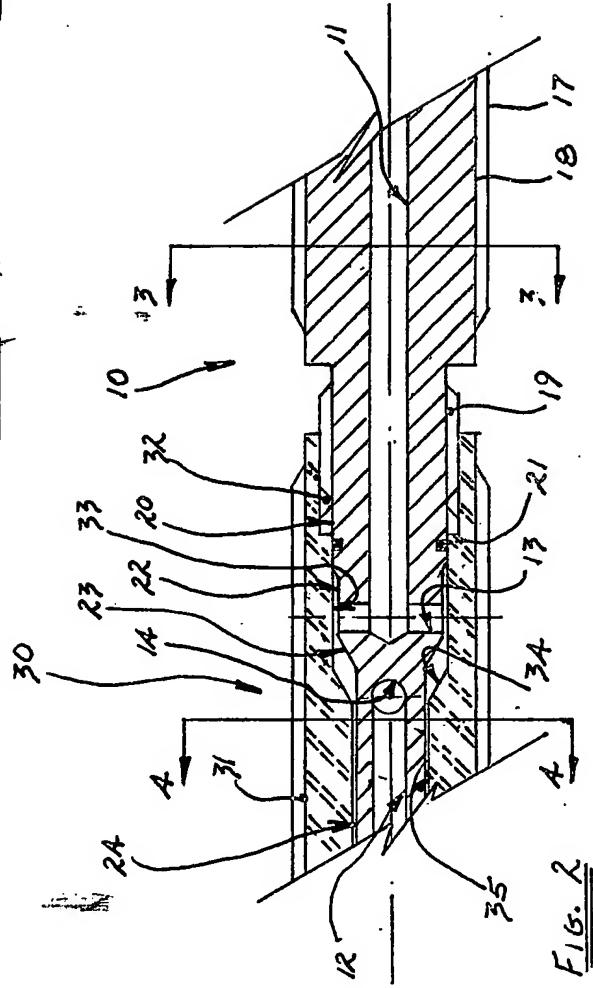
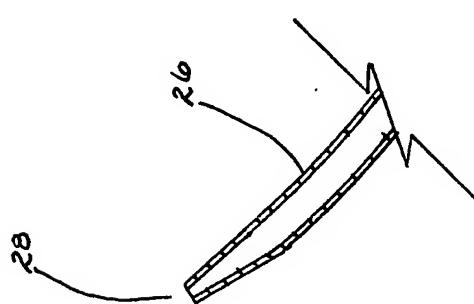


Fig. 2



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## SPECIFICATION

## Fluid jet control nozzle

The invention relates to a nozzle for controlling a jet of fluid, and more particularly but not exclusively to a nozzle connectible to a flexible hose-pipe for washing relatively inaccessible places, for example the undersides of motor cars, with water. The jet could alternatively be of steam or air.

Hitherto, nozzles suitable for this and similar purposes have lacked a tap, rendering them inconvenient in use, or have been provided with a projecting tap, rendering them awkward to handle, liable to damage the article being treated and ugly in appearance. The object of the present invention is to remedy these disadvantages.

According to the invention, a nozzle for controlling a jet of fluid comprises a body having an inlet and an outlet, and a sleeve surrounding a zone of the body and moveable co-axially relative thereto to prevent or permit the flow of fluid from the inlet to the outlet.

A preferred embodiment of the invention will now be described, by way of example, with reference to the accompanying drawings of which:

Fig. 1 is a section through the centre-line of a nozzle;  
 Fig. 2 is an enlargement of part of Fig. 1;  
 Fig. 3 is a section on the line 3—3 in Fig. 2; and  
 Fig. 4 is a section on the line 4—4 in Fig. 2.

Referring now to the drawings, a nozzle suitable for washing the undersides of motor cars, farm machinery or the like with water has a body including a metal cylindrical member indicated generally at 10 with co-axial inlet and outlet bores 11 and 12 respectively which do not meet. The inner end of the inlet bore 11 intersects a diametrical hole 13 in the member 10, and the inner end of the outlet bore 12 similarly intersects a diametrical hole 14 in said member. The periphery of the member 10 is made up of a multiplicity of portions of different diameters. Starting at its inlet end, these are:—A portion 15 of reduced diameter, with at least one annular groove 16, for the reception of a flexible hose-pipe; a portion 17 of maximum diameter with flutes 18 or the like forming a hand grip; a screw-threaded portion 19 of smaller diameter than the portion 17; a portion 20 of the root diameter of the screw thread, with an annular groove containing an O-ring 21; a portion 22 of smaller diameter than the portion 20; a frusto-conical portion 23 and a portion 24 of minimum diameter with an annular groove containing an O-ring 25. The hole 13 communicates with the portion 22, and the hole 14 communicates with the portion 24 between the portion 23 and the O-ring 25. The body also includes an elongated metal tube 26 which is rigidly secured in fluid-tight manner by brazing or the like in a counterbore 27 formed at the outer end of the outlet bore 12. At that end of the tube 26 remote from the member 10, that is to say at the outlet end of said tube, its bore is

reduced in area as indicated at 28 to produce a relatively high-velocity jet, and the tube 26 is curved as indicated at 29 in the region of its outlet end. Said tube is greatly elongated in relation to its bore to enable it to reach relatively inaccessible places. A sleeve indicated generally at 30 surrounds a zone of the body extending from the portion 17 of the member 10 to the juncture of said member and the tube 26. The periphery of the sleeve 30 is of the same diameter as the portion 17 and has flutes 31 identical to the flutes 18. The sleeve 30 has a stepped bore consisting of the following portions:—A screw-threaded portion 32 adapted to engage the portion 19 of the member 10; a portion 33 surrounding the two portions 20 and 22 and fitting closely around the portion 20 so as to make sealing contact with the O-ring 21 but spaced radially from the portion 22; a frusto-conical portion 34 which is the counterpart of the portion 23; a portion 35 which surrounds part of the portion 24 and is spaced radially therefrom; and a portion 36 which surrounds the remainder of the portion 24 and fits closely around it so as to make sealing contact with the O-ring 25. Thus the portions 22, 23, 24, 33, 34 and 35, define a sealed annular chamber between the member 10 and the sleeve 30, and the frusto-conical portions 23 and 34 constitute a valve interposed in said chamber as hereinafter explained. The sleeve 30 is formed of high density plastics material to ensure that said valve seals well when closed, and to provide a comfortable hand grip especially outdoors in cold weather. The outer end of the inlet bore 11 is counterbored at 37 to permit the insertion of a detergent pellet therein if desired.

In operation, when the frusto-conical portions 23 and 34 are apart as shown in the drawings, water flows freely from the hose pipe through the bore 11, the hole 13, the afore-mentioned annular chamber, the hole 14, the bore 12 and the tube 26 from which it emerges as a jet. To stop the flow of water through the nozzle, the sleeve 30 is screwed along the member 10 until the frusto-conical portions 23 and 34 contact each other, and the flow is re-established by screwing the sleeve in the opposite direction. The valve constituted by the frusto-conical portions can be used to control the rate of flow if so desired.

In a modification, the cylindrical member 10 can be formed of high density plastics material and the metal tube 26 secured to it by adhesive.

## CLAIMS

1. A nozzle for controlling a jet of fluid comprising a body having an inlet and an outlet, and a sleeve surrounding a zone of the body and moveable co-axially relative thereto to prevent or permit the flow of fluid from the inlet to the outlet.
2. A nozzle according to claim 1, wherein the body comprises a cylindrical member containing the inlet, and a tube rigidly secured at one end in fluid-tight co-axial relationship to said member and having the outlet at its other end.
3. A nozzle according to claim 2, wherein the

bore of the tube is reduced in area at its outlet end.

4. A nozzle according to claim 2 or claim 3, wherein the tube is greatly elongated in relation to its bore.

5. A nozzle according to any one of claims 2 to 4, wherein the tube is curved in the region of its outlet end.

6. A nozzle according to any one of the preceding claims, wherein the sleeve is formed of high density plastics material.

7. A nozzle according to any one of the preceding claims, wherein a sealed annular chamber is formed between the exterior of the body and the interior of the sleeve, a frusto-conical portion formed on the exterior of the body between the ends of the chamber co-operates with a frusto-conical portion formed within the sleeve such that the two portions are moveable together or apart by relative movement of the body and the sleeve

25 to constitute a valve, and the inlet and the outlet respectively communicate with the chamber at opposite ends of the frusto-conical portion on the body.

8. A nozzle according to claim 7, wherein the chamber is sealed by two O-rings disposed at its respective ends between the body and the sleeve.

9. A nozzle according to any one of the preceding claims, wherein the body and the sleeve are relatively moveably interconnected by screw thread means.

10. A nozzle according to any one of the preceding claims, wherein the inlet is counterbored to permit the insertion therein of a pellet for treating the fluid.

11. A nozzle for controlling a jet of liquid constructed, arranged and adapted to operate substantially as hereinbefore described with reference to, and as illustrated by, the accompanying drawings.

Printed in the United Kingdom for Her Majesty's Stationery Office, Demand No. 8818935, 10/1984. Contractor's Code No. 6378.  
Published by the Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.